Our Journey To Demand Driven
Who We Are

Design & manufacture the best high-definition surveillance solutions that provide unmatched image detail

Delivers the best image quality
Easiest system to use
Better ROI
The Digital Advantage

• Avigilon is first to be certified to be used for evidence in courts (pixels/sq. in.)

• Units are more expensive but require 1/2 to 1/3 fewer units than competitors’ systems
Markets We Serve

- Airports
- Banking
- Casinos
- City Surveillance
- Commercial Properties
- Critical Infrastructure

- Education
- Health Care
- Retail
- Stadiums
- Public Transit
What We Do

End-to-End Open HD Surveillance System

- Avigilon Control Center Software
- HD IP Cameras
- Lenses / Enclosures
- Analog Encoders
- Network Switches
- NVRs
- Workstations
Product Line Up

- Box Body
- 180 & 360 Panoramic
- Microdome
- Dome
- Bullet
- PTZ
Challenge: Rampant Growth

Quarterly Revenue by Geographic Region

$ Millions CDN

- Latin America
- Asia-Pacific
- UK
- Canada
- EMEA
- USA

- Q3/10
- Q4/10
- Q1/11
- Q2/11
- Q3/11
- Q4/11
- Q1/12
- Q2/12
- Q3/12
- Q4/12
- Q1/13
- Q2/13
- Q3/13

$60M
$100M
$177M
Q4/13
$55.7M
Our System Starting Point

Dependent Planning Horizon and Lead Time to Customers

- Stocking locations were unplanned;
- Priorities were not clear;
- A lot of expediting and overtime;
- Growing backlog and service erosion.

Diagram:

- Suppliers
- Packaging Materials and VMI
- PCB Subcomponent Assemblies
- Various Assembly Operations
- Subcomponent Accessories & VMI
- Burn In & Calibration
- Clean Room
- Various Assembly Operations
- SMT
- Base Program
- Outsourcing
- DVD Duplicator
- RM Stores & VMI
- Server and Workstation Packaging
- Server and Workstation Burn In
- Server and Workstation Assembly
- Finished Goods Central warehouse
- Distribution Centers
- Packaging
- Test
- Packaging
- Burn In
- Packaging
- Burn In
- Packaging
- Burn In
- Packaging
- Burn In
Demand Driven Journey Time Line

• June 2013 - First meeting with Synchronix Technologies (Steve Jackson and Rod Gelhorn)

• July 2013 - Rod Gelhorn contracted to establish basic production processes and increase production shipments (CSL – 90.7%, 82.2%)

• October 2013 engaged Constraints Management Group and began working on data extracts to enable DDMRP with R+® and Drum Buffer Roper scheduling and execution with DBR+™

• November 2013 CMG facilitated a 3 day Demand Driven Design Workshop the principles of Demand Driven MRP (DDMRP and R+®) and drum-buffer-rope operations scheduling (DBR+™)
Demand Driven Journey Time Line

- The November workshop outcomes:
  - A project map to implement the new demand flow system
  - A short run interim operations plan to buffer, elevate and exploit the production Calibration/Test control point
  - And un-dedicate the test stations and four of the feeding assembly lines to increase flow.
Strategic Decoupling

- Configure, test, package lead time
- Camera subassembly lead time
- PCB lead time

- Short independent planning and execution horizons

- Packaging Materials and VMI
- Subcomponent Accessories & VMI
- PCB Subcomponent Assemblies
- Various Assembly Operations
- Clean Room
- Solder
- Base Program
- SMT
- RM Stores & VMI
- Outsourcing
- Stock Buffers

- Suppliers

- Lead Time to Customers & DC
- Configure, test, package lead time
- Camera subassembly lead time
- PCB lead time

- Customers
- Packaging
- Test
- Burn In & Calibration
- Various Assembly Operations
- Clean Room
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- Distribution Centers
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- Test
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- Server and Workstation Packaging
- Server and Workstation Burn In
- Server and Workstation Assembly
- DVD Duplicator

- Suppliers

- DVD Duplicator
- Outsourcing
Investing in Flexibility - Capacity Buffers

- Short Independent planning and execution horizons

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- Lead Time to Customers & DC
  - Configure, test, package lead time
  - Camera subassembly lead time
  - PCB lead time

- PCB Subcomponent Assemblies
- Various Assembly Operations
- Burn In & Calibration
- Clean Room
- Base Program
- SMT
- Storage & VMI

- Subcomponent Accessories & VMI
- Stock Buffers
- Capacity Buffers

- Time Buffers

- Suppliers
- Outsourcing
- DVD Duplicator
- Camera subassembly lead time
- PCB lead time

- Packaging Materials and VMI
- Packaging
- Test
- Subcomponent Assemblies

- Demand Driven World International Conference 2014

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March 20-21, Portland, OR

Simple, profound and fundamental changes for a more volatile and complex global landscape.
Demand Driven Journey Time Line

• December 28, 2013 R+® goes live
• December 31, 2013
  – Record month, record quarter, record year at $177.5M and ...
  – Customer Service Levels
    • Vancouver, BC  99.26%
    • Louisville, KY  99.03%
  – No backlog (vs opening 2013 with $5 million backlog)
• January R+ is stabilized and buffers zones built
• January 31, 2014 DBR+™ goes live
• February 2014 DBR+™ stabilized and smart metric data collection is established to begin continuous process improvement cycle.
Finished Goods Buffer Schedule for Test Control Points and Server Assembly

- Zone and % determine sequence and priority.
- Work Orders are launched based on the Available Stock Status.

Schedule Test Finished Items

<table>
<thead>
<tr>
<th>Order #</th>
<th>Due Date</th>
<th>Item #</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO 819-87</td>
<td>5/24</td>
<td>FPB</td>
</tr>
<tr>
<td>WO 832-41</td>
<td>5/22</td>
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</tr>
<tr>
<td>WO 211-72</td>
<td>5/22</td>
<td>FPA</td>
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</table>

Demand Driven World
International Conference 2014
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Simple, profound and fundamental changes for a more volatile and complex global landscape.
PCBA Stock Buffers Schedule for SMT Control Point

Sequencing and Priority: Work Orders are launched based on the Available Stock Status.

Schedule SMT Circuit Board Items:

<table>
<thead>
<tr>
<th>Order #</th>
<th>Due Date</th>
<th>Item #</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO 932-01</td>
<td>5/19</td>
<td>B897</td>
</tr>
<tr>
<td>WO 864-01</td>
<td>5/18</td>
<td>H275</td>
</tr>
<tr>
<td>WO 973-01</td>
<td>5/20</td>
<td>C283</td>
</tr>
</tbody>
</table>

Finitely scheduled
All Other Resource Schedules Float

Finitely scheduled

SMT

Finitely scheduled

Test

Monitor capacity buffers in non-control point resources looking for potential overloads

Measure:

Base Program
Solder

Clean Booth
Assembly Lines
Burn In & Calibration
Packaging

Work Order Load
Capacity
Assembly Line Resource Priority Alignment

### Yet to Be Received

<table>
<thead>
<tr>
<th>Early</th>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>Late</th>
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### Received

<table>
<thead>
<tr>
<th>Early</th>
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### Finished Items

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<th>Item #</th>
<th>Buffer Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO 819-87</td>
<td>05/24</td>
<td>FPA</td>
<td>Critical 13%</td>
</tr>
<tr>
<td>WO 832-41</td>
<td>05/22</td>
<td>FPB</td>
<td>Critical 17%</td>
</tr>
<tr>
<td>WO 211-72</td>
<td>05/22</td>
<td>FPE</td>
<td>Med 34%</td>
</tr>
</tbody>
</table>

Assembly lines and clean room expedite priorities are based on critical red and late zone buffer penetrations at test.

Test and server assembly expedite priorities are based on critical red % or stock out status of finished stock buffer zones.
Board Execution Priority Alignment

Raw stock staging and set up priorities for SMT operations are prioritized by the critical red and late zone buffer penetrations.

Execution Priority alignment on red zone and late
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</tr>
</tbody>
</table>

Control points and resources feeding the board stock buffers expedite priorities are based on the critical red % and stock out status of the board buffers.

Circuit Board Items Status
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<td>25%</td>
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<tr>
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<td>5/20</td>
<td>C283</td>
<td>40%</td>
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Execution Priority alignment on red zone and late
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Board Stock
Results:

- 2013 ended with near perfect customer service levels (99+%).
- Both overtime and expedited freight costs dramatically reduced.
- Major shift in our planning horizon:
  - From: “What do we need to build now to fill orders”
  - To: “Which stock buffer needs to be replenished”
- Significant Production Volume increase
- Increased plant performance came with much less stress and no heroics.
What does this mean?
Debra, 2/22/2014
Results

• We were able to build distribution center stock buffers while supporting our sales growth.
• Buying and planning is greatly simplified and our signals are based on real pull and priority.
• Execution priorities are stable because our schedules are reliable and based on true demand pull priority.
• All resources remain synchronized to the right schedule and market priorities due to the visibility provided by the time buffer and stock buffers.
• No significant change in inventory dollar value levels.
• We use DBR+™ resource loading graphs to proactively plan additional resource requirements.
Next Steps and Expected Results

• For DBR+™ and R+®:
  - Learn to use the smart metrics our new system
  - Focus on improvement opportunities as well as capital and labor investments to meet our sales growth

• Growth Targets
  - $500M in 2016
Questions?